

CLAIMS

We claim:

1. An apparatus for enclosing goods on a surface for treatment comprising:
5 a canopy that is substantially impermeable to flowable materials;
an upper perimeter for supporting an upper portion of said canopy;
a lower perimeter for supporting a lower portion of said canopy, said lower perimeter
being moveable with respect to said upper perimeter to form a chamber;
a perimeter support for supporting said upper perimeter and lower perimeter; and
a gasket in communication with said lower perimeter, said gasket being deformable to
substantially seal the chamber by compressing said gasket against the surface.
2. The apparatus of Claim 1 wherein said upper perimeter comprises an upper truss, said
lower perimeter comprises a lower truss, and said perimeter support comprises an upper
support chain for suspending said upper truss and a lower support chain for suspending
said lower truss.
3. The apparatus of Claim 2 wherein said upper truss has a chain guide affixed thereto.
4. The apparatus of Claim 2 wherein a stop block is affixed to said lower support chain.
5. The apparatus of Claim 1 wherein the perimeter support comprises at least one hoist
element, said element selected from the group comprising a chain, a rope, a wire, or a

cable.

6. The apparatus of Claim 1 further comprising means for moving the lower perimeter with respect to the upper perimeter to form the chamber.

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7. The apparatus of Claim 1 further comprising at least one collapsible duct in communication with the chamber.

8. The apparatus of Claim 7 further comprising at least one vent fan in communication with the chamber, the collapsible duct removeably attached to the vent fan.

9. The apparatus of Claim 8 wherein the at least one vent fan is mountable on and extends through said canopy.

10. The apparatus of Claim 1 wherein said gasket comprises a solvent dispersed synthetic rubber resin adhesive.

11. The apparatus of Claim 1 wherein said gasket comprises a material selected from the group consisting of rubber tubing, plastic tubing, a laminated casing filled with compressible material, and plastic foam.

12. The apparatus of Claim 1 wherein the gasket has a hollow portion along its length and an inner surface in communication with the chamber, the inner surface having a plurality of

perforations extending from the chamber to the hollow portion of the gasket.

13. The apparatus of Claim 12 further comprising a flowable material supply in communication with the hollow portion of the gasket.

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14. The apparatus of Claim 12 wherein the flowable material supply is a cold air supply.

15. The apparatus of Claim 1 further comprising a conduit for supplying a flowable material to the chamber.

16. The apparatus of Claim 1 further comprising a perforated tube substantially within the chamber to supply a flowable material to the chamber.

17. The apparatus of Claim 1 further comprising an intermediate support attached to the upper perimeter to further support said upper portion of said canopy.

18. The apparatus of Claim 17 wherein said intermediate support comprises a wire mesh.

19. The apparatus of Claim 1 wherein the canopy is positioned between the lower perimeter and the gasket.

20. A method of treating goods with a flowable material comprising the steps of:
placing the goods on a surface;

providing an apparatus comprising:

a canopy that is substantially impermeable to the flowable material;

an upper perimeter for supporting an upper portion of said canopy;

a lower perimeter for supporting a lower portion of said canopy;

a perimeter support for supporting said upper perimeter and lower perimeter; and

a gasket in communication with said lower perimeter, said gasket being

deformable;

lowering the apparatus to form a chamber over said goods on said surface;

causing the gasket to deform against said surface to substantially seal the chamber;

treating the goods; and

venting the chamber.

21. The method of Claim 20 further comprising the step of raising the apparatus to expose the goods for removal from the surface.

22. The method of Claim 20 wherein the flowable material is methyl bromide gas, the goods are produce and the step of treating the produce comprises injecting the methyl bromide gas into the chamber to fumigate the produce.

23. The method of Claim 20 further comprising the step of circulating the flowable material for a predetermined time within the chamber after the step of injecting.

24. The method of Claim 20 wherein the lower perimeter of the apparatus is compressed

toward the upper perimeter and the apparatus further comprises means for moving the lower perimeter, the step of lowering the apparatus comprising the step of lowering the lower perimeter away from the upper perimeter to form the chamber.

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25. The method of Claim 20 wherein the step of treating the goods comprises injecting the flowable material into the chamber.

26. The method of Claim 25 wherein the flowable material is cool air.

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27. The method of Claim 25 wherein the gasket has a hollow portion along its length and an inner surface in communication with the chamber, the inner surface having a plurality of perforations extending from the chamber to the hollow portion of the gasket, and the step of injecting the flowable material into the chamber further comprises connecting a flowable material supply to the hollow portion of the gasket.

28. The method of Claim 25 wherein the apparatus further comprises a perforated tube substantially within the chamber, and wherein the step of injecting the flowable material into the chamber comprises connecting a flowable material supply to the perforated tube.

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29. The method of Claim 25 wherein the apparatus further comprises a means for injecting the flowable material into the chamber, and wherein the step of injecting the flowable material into the chamber comprises connecting a flowable material supply to the means

for injecting the flowable material.

30. An apparatus for enclosing goods on a surface for fumigation comprising:
- a canopy that is substantially impermeable to flowable materials;
- an upper perimeter for supporting an upper portion of said canopy;
- a lower perimeter for supporting a lower portion of said canopy, said lower perimeter to be placed in proximity to said surface;
- a support structure capable of supporting said upper perimeter and lower perimeters; and
- a gasket in communication with said lower perimeter, wherein said gasket is capable of being compressed by said lower perimeter against said surface to form a chamber.

31. The apparatus of Claim 30 wherein said upper perimeter comprises an upper truss, said lower perimeter comprises a lower truss, and said support structure comprises an upper support chain for suspending said upper truss and a lower support chain for suspending said lower truss.

32. The apparatus of Claim 30 further comprising an intermediate support capable of supporting said canopy intermediately to said upper and lower perimeters, said intermediate support comprising a wire mesh.

33. The apparatus of Claim 30 wherein the support structure comprises at least one hoist element, said element selected from the group comprising a chain, a rope, a wire, or a cable.

34. The apparatus of Claim 30 further comprising means for moving the lower perimeter with respect to the upper perimeter to form the chamber.

5 35. The apparatus of Claim 30 further comprising at least one collapsible duct in communication with the chamber.

36. The apparatus of Claim 35 further comprising at least one vent fan in communication with the chamber, the collapsible duct removeably attached to the vent fan.

37. The apparatus of Claim 36 wherein the at least one vent fan is mountable on and extends through said canopy.

38. The apparatus of Claim 30 wherein said gasket comprises a solvent dispersed synthetic rubber resin adhesive.

39. The apparatus of Claim 30 wherein said gasket comprises a material selected from the group consisting of rubber tubing, plastic tubing, a laminated casing filled with compressible material, and plastic foam.

20 40. The apparatus of Claim 30 wherein the gasket has a hollow portion along its length and an inner surface in communication with the chamber, the inner surface having a plurality of perforations extending from the chamber to the hollow portion of the gasket.

41. The apparatus of Claim 40 further comprising a flowable material supply in communication with the hollow portion of the gasket.
42. The apparatus of Claim 41 wherein the flowable material supply is a cold air supply.
43. The apparatus of Claim 30 further comprising a conduit for supplying a flowable material to the chamber.
44. The apparatus of Claim 30 further comprising a perforated tube substantially within the chamber to supply a flowable material to the chamber.
45. The apparatus of Claim 30 wherein the canopy is positioned between the lower perimeter and the gasket.
46. An apparatus for enclosing produce on a surface for fumigation and re-cooling comprising:
 - a canopy that is substantially impermeable to flowable materials;
 - an upper perimeter for supporting an upper portion of said canopy;
 - a lower perimeter for supporting a lower portion of said canopy, said lower perimeter being moveable with respect to said upper perimeter to form a chamber;
 - a perimeter support for supporting said upper perimeter and lower perimeter;
 - a gasket in communication with said lower perimeter, said gasket being deformable to

substantially seal the chamber by compressing said gasket against the surface;

a fumigation conduit for injecting a flowable material into the chamber;

a vent to release the flowable material from the chamber;

a means for changing a pressure within the chamber; and

a cooling conduit for supplying chilled air to the chamber.

47. The apparatus of Claim 46 wherein said upper perimeter comprises an upper truss, said lower perimeter comprises a lower truss, and said perimeter support comprises an upper support chain for suspending said upper truss and a lower support chain for suspending said lower truss.

48. The apparatus of Claim 46 wherein the perimeter support comprises at least one hoist element, said element selected from the group comprising a chain, a rope, a wire, or a cable.

49. The apparatus of Claim 46 further comprising means for moving the lower perimeter with respect to the upper perimeter to form the chamber.

50. The apparatus of Claim 46 wherein said gasket comprises a solvent dispersed synthetic rubber resin adhesive.

51. The apparatus of Claim 46 wherein said gasket comprises one or more selected from the group consisting of rubber tubing, plastic tubing, a laminated casing filled with

compressible material, and plastic foam.

52. The apparatus of Claim 46 further comprising an intermediate support structure capable of supporting said canopy intermediately to said upper and lower trusses.

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53. The apparatus of Claim 46 wherein the means for changing the pressure within the chamber comprises at least one vent fan.

54. The apparatus of Claim 53 further comprising a collapsible duct removeably attached to at least one of the at least one vent fan.

55. The apparatus of Claim 53 wherein the at least one vent fan is mountable on and extends through said canopy.

56. The apparatus of Claim 46 wherein the cooling conduit forms a bore along the length of said gasket, the cooling conduit having an inner surface in communication with the chamber, the inner surface having a plurality of perforations extending from the chamber to the cooling conduit.

57. The apparatus of Claim 46 wherein the cooling conduit is a perforated tube substantially within the chamber.

58. A method of fumigating and re-cooling produce comprising the steps of:

placing the produce on a surface;

providing an apparatus comprising:

a canopy that is substantially impermeable to flowable materials;

an upper perimeter for supporting an upper portion of said canopy;

a lower perimeter for supporting a lower portion of said canopy;

a perimeter support for supporting said upper perimeter and lower perimeter; and

a gasket in communication with said lower perimeter, said gasket being

deformable;

lowering the apparatus to form a chamber over said produce on said surface;

causing the gasket to deform against said surface to substantially seal the chamber;

injecting a first flowable material into the chamber to fumigate the produce;

venting the first flowable material from the chamber;

creating a first negative pressure within the chamber; and

supplying a second flowable material to the chamber for re-cooling the produce.

59. The method of Claim 58 further comprising the step of raising the apparatus to expose the goods for removal from the surface.

60. The method of Claim 58 wherein the first flowable material is methyl bromide.

61. The method of Claim 58 further comprising the step of circulating the first flowable material for a predetermined time within the chamber after the step of injecting the first flowable material.

62. The method of Claim 58 wherein the lower perimeter of the apparatus is compressed toward the upper perimeter and the apparatus further comprises means for moving the lower perimeter, the step of lowering the apparatus comprising the step of lowering the lower perimeter away from the upper perimeter to form the chamber.
63. The method of Claim 58 wherein the second flowable material is supplied to the chamber via a cooling conduit in communication with the chamber.
64. The method of Claim 63 wherein the cooling conduit forms a bore along the length of said gasket, the cooling conduit having an inner surface in communication with the chamber, the inner surface having a plurality of perforations extending from the chamber to the cooling conduit, and the step of supplying the second flowable material further comprises connecting a chilled air supply to the cooling conduit.
65. The method of Claim 63 wherein the cooling conduit further comprises a perforated tube, and wherein the step of supplying the second flowable material further comprises connecting a chilled air supply to the cooling conduit.
66. The method of Claim 58 further comprising the steps of creating a second negative pressure within the chamber and supplying a third flowable material to the chamber for re-cooling the produce.